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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,745	10/18/2005	Christopher John Douglas Pomfrett	39-314	6133

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EXAMINER	
STOUT, MICHAEL C	

ART UNIT	PAPER NUMBER
3736	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,745	POMFRETT ET AL.	
	Examiner	Art Unit	
	MICHAEL C. STOUT	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 02 March 2009.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 22-43 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 22-43 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This detailed action is in regards to United States Patent Application 10/553,745 filed on 10/18/2005.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/02/2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 22-26, 28, 33, 36, 38-40 and 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Boone (US 5,919, 142) In view of Trivedi et al. (US 4,862,359) and John et al. (US 2002/0091335).

Regarding claim 22, 38 and 42, Boone discloses a method for monitoring the response of a nervous system of a body to a sensory stimulus (abstract), said method comprising:

Boone teaches providing plurality of electrodes on a surface of the body, (multiple electrodes E1-E16 are placed around the subjects head) wherein current is passed between selected areas of the surface of the body by passing current between

at least one pair of electrodes of said plurality (current from the current generator is passed between E11 and E12, see Column 4, Lines 7-10), said current being provided by a current source external to said body (current generator 50 see Figure 1), applying a sensory stimulus to a patient (see Figure 5 and Column 7),

collecting a set of voltage measurements between selected ones of said plurality of electrodes while said current is passing between said at least one pair of electrodes (see Column 4, Lines 20-33); wherein the set of voltage measurements is collected over a predetermined measurement period (teaches the current applied for the voltage measurements).

Trivedi teaches a method of monitoring a stimulus response during a predetermined measurement period (measurement period frames) is initiated after a predetermined delay following the stimulus (the measurement is taken every 4ms after the application of the stimulus, 16) based upon a neurological model following occurrence of the sensory stimulus (the transient nature of the brain signal coupled with the taking of multiple frames of data initiated after predetermined time intervals after the stimulus is applied allows the construction of a time lapse image of brain activity, see Column 26, Lines 3-45, these difference input activity signals 14 can also undergo the additional analysis 40 and provide other forms of the topographical maps 44 of EP response and EEG measurements. Display of the difference signals 14 and their derivatives from the analysis 40 enable diagnosis of disparities associated with brain abnormalities

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone to include inititating a measurement period a predetermined time after the stimulus as been applied as taught by Trivedi in order to construct a time lapse image of the brain.

John teaches the method wherein, the collected measurements are compared with reference measurements (the data is then analyzed and compared to a set of reference values, see [0011]) to determine normal or abnormal response of the nervous system (information can then be used to detect a normal (reference values) or abnormal (deviation from reference values) response to the stimulus to detect a physiological state, see [0017]).

Regarding claim 23, Boone in view of Trivedi and John further teaches the method according to claim 22, wherein the set of voltage measurements is used to produce an image representing the distribution of impedance within the body (the data is stored to be processed into an image by reconstruction software, see Boone Figure 4, Column 4, Lines 33-46, see Trivedi Figures 6 and 7, a printer 49 may be used to print out a report on the patient. Preferably the printer is a color printer which is used to generate a topographic "heat scale" color-coded map of the patient's head showing, by its colors, the patient's statistical "normal" and "abnormal" regions., see John [0042]).

Regarding claim 24, Boone in view of Trivedi and John further teaches the method according to claim 22, wherein: the sensory stimulus comprises a series of second stimuli (See Figure 5, A and B), a set of voltage measurements is collected during current injection periods initiated after application of each second stimulus (best

shown in Boone Figure 5), the collection of voltage measurements related to each second stimulus is initiated at a time delay relative to the respective second stimulus (teaches various measurement periods initiated and different delays after a stimulus to create a time lapse image see Boone and Trivedi cited above),the time delay differs for each second stimulus (each corresponding stimulus has a corresponding delay and the different measurement delays capture different time fames of the brain activity Trivedi Column 26), and differences between collected sets of voltage measurements are interpreted as representing changes in nervous system activity over the time difference between the respective time delays (the measurements taken at different delays represent a time change image of the brain activity, see Trivedi Columns 25 and 26).

Regarding claim 25, Boone in view of Trivedi and John teaches the method according to claim 24, wherein each set of voltage measurements is used to produce a respectively corresponding image representing the distribution of impedance within the body and the thus produced images are compared with each other to identify changes in nervous system activity (Boone teaches the multiple measurements are used in imaging software, Column 4, Lines 33-46, and Trivedi Column 25 and 26, and John [0042] and [0011])

Regarding claim 26, Boone in view of Trivedi and John further teaches the method according to claim 22, wherein the applied sensory stimulus is a visual or an auditory stimulus (Visual stimulus see Boone Figure 1 and Figure 5).

Regarding claim 28, Boone teaches method according to claim 22, further comprising applying the sensory stimulus (see Figure 5 and Column 7).

Regarding claim 33, Boone fails to teach comparing the measured values to reference values. John teaches the method wherein, the collected measurements are compared with reference measurements (the data is then analyzed and compared to a set of reference values, see [0011]) to determine normal or abnormal response of the nervous system (information can then be used to detect a normal (reference values) or abnormal (deviation from reference values) response to the stimulus to detect a physiological state, see [0017]).

Regarding claims 39 and 40, Boone in view of Trivedi and John teaches performing the method of claim 22 as set forth above.

Boone teaches a programmable control apparatus comprising a program to operate the data acquisition cycle using a processor, see Column 7, Lines 45-58) and

John teaches a computer apparatus (Figure 1) comprising a memory [data carrier carrying computer program code means to cause a computer to execute a procedure] (internal memory of approximately 100MB, see [0036]) and a processor (microprocessor, [0035]) for reading and executing instructions from said memory, wherein the memory comprises instructions, see [0018]).

Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the apparatus taught by Yamazaki to include a computing apparatus comprising memory and a processor for executing a method as taught by John, in order to perform the method of claim 22 above taught by Boone in view John in order to generate a report showing the patients statistical “normal” and “abnormal“ regions, see John [0041] and [0042]. One of ordinary skill in the art would

recognize that the implementation of a method on a using instructions stored in memory, is a known well known means in the art for implementing a method.

Regarding claim 36, Boone teaches an apparatus for monitoring the response of a nervous system of a body to an applied sensory stimulus, said apparatus comprising:

means for applying the sensory stimulus to the body (pulse generator, 70, see Figure 1);

means for collecting a set of voltage measurements between selected ones of said electrodes while said current is being passed between said at least one pair of electrodes (amplifier 20 A/D converter 30, interface 40 and Computer 60), wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period (the measurements are collected over the measurement period shown in Figure 5) and means for comprising collected values (computer 60) which may comprise image analysis software.

Boone fails to teach the method wherein the measurement period is initiated after apredetermined delay based upon a neuroloqical model following occurrence of the sensory stimulus, and means to compare the collected voltage measurements with reference measurements to determine normal or abnormal response of the nervous system

Trivedi teaches a device for monitoring a stimulus response during a predetermined measurement period (measurement period frames) is initiated after a predetermined delay (the measurement is taken every 4ms after the application of the

stimulus, 16) based upon a neurological model following occurrence of the sensory stimulus (the transient nature of the brain signal coupled with the taking of multiple frames of data initiated after predetermined time intervals after the stimulus is applied allows the construction of a time lapse image of brain activity, see Column 26, Lines 3-45, these difference input activity signals 14 can also undergo the additional analysis 40 and provide other forms of the topographical maps 44 of EP response and EEG measurements. Display of the difference signals 14 and their derivatives from the analysis 40 enable diagnosis of disparities associated with brain abnormalities

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone to include inititating a measurement period a predetermined time after the stimulus as been applied as taught by Trivedi in order to construct a time lapse image of the brain.

John teaches an apparatus for monitoring a nervous system response comprising a means are provided (a computer system 40 comprising a processor 42 and memory 41 which can transmit and store data and a printer 49 to print normal and abnormal responses [0040]-[0042] the data is then analyzed and compared to a set of reference values, see [0011]) to compare the collected voltage measurements with reference measurements to determine normal (reference values) or abnormal (deviation from reference values) response to the stimulus to detect a physiological state, see [0017]).

Both Boone and John teach an apparatus for monitoring a nervous system response to a stimulus.

Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the apparatus taught by Yamazaki to include a means for comparing measured values to reference values as taught by John in order to generate a report showing the patients statistical “normal” and “abnormal“ regions, see John [0041] and [0042].

Claims 29-31 and 41 rejected under 35 U.S.C. 103(a) as being unpatentable over Boone (US 5,919, 142) In view of Trivedi et al. (US 4,862,359), John et al. (US 2002/0091335) and Yamazaki et al. (US 5,638,825).

Regarding claim 29, Boone fails to explicitly disclose the method wherein the application of the stimulus is detected. Yamazaki teaches the method of applying a randomized stimulus, wherein when application of the stimulus is detected (the system measurement control section detects a stimulus is generated when the control section 20, sends a signal 202, to the measurement control section 13, after sending a signal 201 to energize the stimulator 11, Yamazaki Column 4, Lines 52-63) and said detection starts measurement of said predetermined time (the control section 13 receives the signal 202 and records after the stimulus form the flash apparatus, see Yamazaki Column 7, Lines 20-30).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone to include detecting the

stimulus as taught by Yamazaki in order to provide a random stimulus which prevents a conditioned response and indicate to the measurement section to begin recoding.

Regarding claim 30, Yamazaki further teaches the method according to claim 29, wherein the sensory stimulus occurs spontaneously (the experimenter will input data into the control section 20 including a time interval 5+alpha wherein alpha is a random number between 0-1, which has not been predetermined, see Yamazaki Column 6, Line 40-45, thereby generating spontaneous stimulus for the user).

Regarding claim 31, Boone and Yamazaki further teach the method according to claim 30, wherein the sensory stimulus is a feature of an environment in which the body is located (Boone teaches the strobe being visual by the patient, Yamazaki, Figures 1 and 2 shows a stimulus device which provides a visual flash, the device and flash being a feature of the environment where the patients body is located)

Regarding claim 41, Boone discloses a method for monitoring the response of a nervous system of a body to a sensory stimulus (abstract), said method comprising:

Boone teaches providing plurality of electrodes on a surface of the body, (multiple electrodes E1-E16 are placed around the subjects head) wherein current is passed between selected areas of the surface of the body by passing current between at least one pair of electrodes of said plurality (current from the current generator is passed between E11 and E12, see Column 4, Lines 7-10), said current being provided by a current source external to said body (current generator 50 see Figure 1), applying a sensory stimulus to a patient (see Figure 5 and Column 7),

collecting a set of voltage measurements between selected ones of said plurality of electrodes while said current is passing between said at least one pair of electrodes (see Column 4, Lines 20-33); wherein the set of voltage measurements is collected over a predetermined measurement period (teaches the current applied for the voltage measurements).

Trivedi teaches a method of monitoring a stimulus response during a predetermined measurement period (measurement period frames) is initiated after a predetermined delay following the stimulus (the measurement is taken every 4ms after the application of the stimulus, 16) based upon a neurological model following occurrence of the sensory stimulus (the transient nature of the brain signal coupled with the taking of multiple frames of data initiated after predetermined time intervals after the stimulus is applied allows the construction of a time lapse image of brain activity, see Column 26, Lines 3-45, these difference input activity signals 14 can also undergo the additional analysis 40 and provide other forms of the topographical maps 44 of EP response and EEG measurements. Display of the difference signals 14 and their derivatives from the analysis 40 enable diagnosis of disparities associated with brain abnormalities.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone to include inititating a measurement period a predetermined time after the stimulus as been applied as taught by Trivedi in order to construct a time lapse image of the brain.

John teaches the method wherein, the collected measurements are compared with reference measurements (the data is then analyzed and compared to a set of reference values, see [0011]) to determine normal or abnormal response of the nervous system (information can then be used to detect a normal (reference values) or abnormal (deviation from reference values) response to the stimulus to detect a physiological state, see [0017]).

Yamazaki teaches a user input time delay (see Column 6, Lines 28-50. Therefore it would have been obvious to one of ordinary skill in the art to modify the delay circuit taught by Boone/Trivedi to include a user input as taught by Yamazaki in order to provide a variable circuit that can be adjusted by the experimenter depending on the desired operation of the device.

Claims 32, 34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boone (US 5,919, 142) In view of Trivedi et al. (US 4,862,359).

Regarding claim 32, Boone discloses a method for monitoring the response of a nervous system of a body to a sensory stimulus (abstract), said method comprising:

Identify the predetermined part of the nervous system, (brain 10, see Figure 1), boone teaches providing plurality of electrodes on a surface of the body, (multiple electrodes E1-E16 are placed around the subjects head) wherein current is passed between selected areas of the surface of the body by passing current between at least

one pair of electrodes of said plurality (current from the current generator is passed between E11 and E12, see Column 4, Lines 7-10), said current being provided by a current source external to said body (current generator 50 see Figure 1),

collecting a set of voltage measurements between selected ones of said plurality of electrodes while said current is passing between said at least one pair of electrodes (see Column 4, Lines 20-33); wherein the set of voltage measurements is collected over a predetermined measurement period (teaches the current applied for the voltage measurements).

Trivedi teaches a method of monitoring a stimulus response during a predetermined measurement period (measurement period frames) is initiated after a predetermined delay (the measurement is taken every 4ms after the application of the stimulus, 16) based upon a neurological model following occurrence of the sensory stimulus (the transient nature of the brain signal coupled with the taking of multiple frames of data initiated after predetermined time intervals after the stimulus is applied allows the construction of a time lapse image of brain activity, see Column 25 Image analysis section and Column 26, Lines 3-45, these difference input activity signals 14 can also undergo the additional analysis 40 and provide other forms of the topographical maps 44 of EP response and EEG measurements. Display of the difference signals 14 and their derivatives from the analysis 40 enable diagnosis of disparities associated with brain abnormalities, the temporal activity of the brain permits the reconstruction of a transient image of brain activity by sampling the brain a different delay periods after the application of stimulus.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone to include inititating a measurement period a predetermined time after the stimulus as been applied as taught by Trivedi in order to construct a time lapse image of the brain.

Regarding claim 34, Boone further teaches the method according to claim 32, further comprising applying the sensory stimulus (Visual stimulus see Boone Figure 1 and Figure 5).

Regarding claim 37, Boone teaches an apparatus for monitoring the response of a predetermined part of a nervous system of a body to an applied sensory stimulus, said apparatus comprising:

a plurality of electrodes for attaching to a surface of the body (E1-E16), said plurality of electrodes being arranged to pass current between selected areas on the surface of the body by passing current between at least one pair of electrodes of said plurality of electrodes (E12 and E11), said current being provided by a current source external to said body (current generator 50); means for applying the sensory stimulus (Pulse generator), and means for collecting a set of voltage measurements between selected ones of said electrodes while said current is being passed between said at least one pair of electrodes (amplifier 20, converter 30 and interface 40),
wherein the set of voltage measurements is collected over a predetermined measurement period (measurement period of 100ms, see Claim 22 above),

Boone fails to teach the apparatus wherein the predetermined measurement period is initiated after a predetermined delay following occurrence of the sensory

stimulus, and said predetermined time is selected on the basis of a neurological model of the nervous

Trivedi teaches a device for monitoring a stimulus response during a predetermined measurement period (measurement period frames) is initiated after a predetermined delay (the measurement is taken every 4ms after the application of the stimulus, 16) based upon a neurological model following occurrence of the sensory stimulus (the transient nature of the brain signal coupled with the taking of multiple frames of data initiated after predetermined time intervals after the stimulus is applied allows the construction of a time lapse image of brain activity, see Column 26, Lines 3-45, these difference input activity signals 14 can also undergo the additional analysis 40 and provide other forms of the topographical maps 44 of EP response and EEG measurements. Display of the difference signals 14 and their derivatives from the analysis 40 enable diagnosis of disparities associated with brain abnormalities

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone to include inititating a measurement period a predetermined time after the stimulus as been applied as taught by Trivedi in order to construct a time lapse image of the brain.

Claims 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boone (US 5,919, 142) In view of Polydorides. et al. (“Krylov Subspace Iterative Techniques: on Detection of Brain Activity with Electrical Impedance Tomography,” IEEE Transactions on Medical Imaging, Vol. 21 No. 6, June 2002

Regarding claim 35, Boone teaches placement of the electrodes to detect brain activity, but fails to explicitly teach the method wherein said regions and/or areas are selected on the basis of a neurological model of the nervous system and the applied sensory stimulus such that sensitivity of the derived impedance measurements to changes in the predetermined part of the nervous system is maximized (One of ordinary skill in the art would recognize that the placement of the electrodes near the visual cortex region of the brain will provide a better indication of response (maximize the sensitivity) to a visual stimulus than placing the electrodes distally from the region)

Polydorides teaches a method of detecting brain activity particually with response to visually stimulation (I. Introduction Paragraphs 1 and 2) comprising passing current between selected regions of a surface of the body, and collecting a set of voltage measurements between selected areas on the surface of the body whilst current is being passed (see I. Introduction Paragraph 1), wherein the said regions and/or areas are selected on the basis of a neurological model of the nervous system and the applied stimulus such that sensitivity of the derived impedance measurements to changes in the predetermined part of the nervous system is maximized (Polydorides also teaches the placement of electrode patters are deliberately placed where the targeted effect was “expected” to occur in order to enhance the system’s sensitivity in that particular region, see Page 601, Column 1, Paragraph 2).

Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the method taught by Boone clude injecting currents

and collecting voltages as taught by Polydorides in order to position the elctrodes where are response is expected to occur to increase sensitivity.

Claims 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boone (US 5,919, 142), in view of Trivedi et al. (US 4,862,359) and Polydorides. et al. (“Krylov Subspace Iterative Techniques: on Detection of Brain Activity with Electrical Impedance Tomography,” IEEE Transactions on Medical Imaging, Vol. 21 No. 6, June 2002

Regarding claim 43, Boone teaches method for monitoring nervous system response to a sensory stimulus, said method comprising:

(a) applying a predetermined sensory stimulus to a nervous system of a living subject (stimulus pulse generator 70);

(b) injecting electrical current through at least a first pair of electrodes affixed to the head of said subject for a first time period (current is injected via the current generator 50 via electrodes E12 and E11 for a first time period 100ms, see claim 22 above);

(c) during said first time period, measuring electrical voltage across further pairs of electrodes also affixed to the head of said subject (voltage is measured between E8 and E7), creating an image of brain activity in said subject based on said measured electrical voltages (voatage images are used to reconstruct an image using software, see Column 4, Lines 34-47.

Polydorides teaches a method of monitoring the response to a stimulus comprising injecting a first current though a first pair of electrodes and a second period wherein subsequent to said first time period, injecting electrical current through at least another pair of said electrodes for another time period; during said another time period, measuring electrical voltages across other pairs of said electrodes; (f) repeating steps (d) and (e) a predetermined number of times (Polydorides teaches a plurality of electrodes wherein 19 current patters and 369 boundary voltages are measured from 18 electrodes placed around the skull, see Simulated Results, Paragraphs 2, 3 and 4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone to include injecting current via multiple electrode pairs and monitoring voltages at different pairs for different current paths as taught by Polydorides in order to reconstruct impedance change images inside the brain's white mater.

Boone teaches providing multiple stimuli and recording multiple measurement periods. Boone in view of Polydorides fails to teach the method wherein the measurement begins after an initial time delay and repeating steps for different initial time delays to derive a time sequence of images revealing nervous system responses to said predetermined sensory stimulus in different parts of the subject's brain.

Trivedi teaches a method of monitoring a stimulus response wherein multiple measurement periods are initiated at multiple predetermined times after the application of the stimulus, See Column 25 and 26, wherein the response is sampled at multiple time delays to construct a time sequence image of the evoked response.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method taught by Boone/Polydorides to include multiple time samples after a stimulus as taught by Trivedi in order to construct a temporal image of the brains response to a stimulus.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boone (US 5,919, 142) In view of Trivedi et al. (US 4,862,359) and John et al. (US 2002/0091335) and in further view of Vauhkonen et al. (*"A Kalman Filter Approach to Track Fast Impedance Changes in Electrical Impedance Tomography,"* IEEE Transactions on Biomedical Engineering, Vol 45, NO. 4, April 1998).

Boone in view of Trivedi and John teaches a method of recording voltages to make an impedance image, see John [0042].

Boone in view of Trivedi and John fails teach a method wherein the measured voltages are filtered using a Kalman filter.

Vauhkonen teaches a method of making an image using voltage measurements wherein the measurements are filtered using a Kalman filter, see Abstract.

Both Boone,John and Vauhkonen teach methods for monitoring a nervous system response to a stimulus.

Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the method taught by Boone/John to include filtering

measurements using a Kalman filter as taught by Vauhkonen in order track fast impedance changes in the impedance distribution, see Vauhkonen Abstract.

Response to Arguments

Applicant's arguments with respect to claims 22-43 have been considered but are moot in view of the new ground(s) of rejection.

The Applicant's arguments are directed towards newly presented claim language which is addressed in the office action above.

Contact Info

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL C. STOUT whose telephone number is (571)270-5045. The examiner can normally be reached on M-F 7:30-5:00 Alternate (Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. S./
Examiner, Art Unit 3736

/Max Hindenburg/
Supervisory Patent Examiner, Art Unit 3736